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ABSTRACT

This report presents the historical background of the Ford Foundation's Educational Facilities Laboratories (EFL), including its funding sources, guiding principles, leadership, operations, philanthropic ventures, and publications. EFL began in response to the need for new educational facilities because of the baby boom in the 1950s and 1960s. How the EFL stimulated or accelerated innovations in school architecture, its work in awarding millions of dollars in grants for systems building programs for schools, and the EFL's impact are discussed. (Contains 19 references.) (GR)

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The Educational Facilities Laboratories (EFL): A History

Judy Marks, National Clearinghouse for Educational Facilities
June 2000

The baby boom that followed World War II, unprecedented in our nation's history, brought with it a crisis in educational facilities. Projections made in the early 1950s showed that by 1958 school capacity would be exceeded by 2.3 million children and that $40 billion would be required for school and college construction between 1958 and 1968.

The American Institute of Architects (AIA) responded by forming a Committee on School Buildings in 1953. The committee included representatives from the U.S. Office of Education, the American Association of School Administrators, the National Education Association, the National Association of Chief State School Officers, and the National Council on School House Construction. In 1956, the AIA committee, joined by a similar working group from the Teachers College of Columbia University, requested funds from the Ford Foundation to conduct school facilities research.

Alvin C. Eurich and Clarence H. Faust from the Fund for the Advancement of Education and others working in the Ford Foundation's Education Division were receptive to this idea, since they had been searching for some means of "solidifying and institutionalizing ways of ridding the educational establishment of its attachment to forms and methods they believed were hamstringing the teaching-learning process," proposing that "it was easier to change buildings and what went into them than to change people." (Armsey 1976:4).

Rather than provide research funding to these committees, however, the Ford Foundation decided to create a separate nonprofit corporation, the Educational Facilities Laboratories (EFL). EFL began operations in 1958 under the direction of Harold B. Gores. Its purpose was to help schools and colleges with their physical problems, stimulate research, and disseminate information useful to those who select sites, plan, design, construct, modernize, equip, and finance educational structures and the tools therein.

For the next 28 years, EFL spurred innovation in school architecture by holding conferences, sponsoring research projects and programs, and awarding grants to thousands of school districts, colleges, and other nonprofit organizations throughout the United States and Canada. Committed to spreading the word of such advancement, EFL distributed over two million copies of its publications on research, experimentation, and emerging trends.

Funding Sources

From 1958 through 1976, the Ford Foundation provided $25.5 million for the general support of EFL's activities. Beginning in 1970, EFL sought collaborative funding to augment its basic Ford Foundation support to multiply its leverage in a period of inflation and declining resources. By 1976, EFL had successfully transformed itself into a self-supporting organization, deriving its revenue from grants and contracts from foundations, government agencies, corporations, nonprofit organizations, school districts, and colleges and universities.

In 1979, EFL merged with the Academy for Educational Development, a nonprofit organization that addressed human development needs through education, communication, and information. Through 1986, while retaining its name, EFL operated as a division of the academy and redirected and broadened its purposes, realigned its programs, and evolved into an internationally recognized consulting organization covering all phases of education planning and management. It served the education community primarily but also won commissions from a broad range of community organizations, art groups, and cultural institutions as well as from business and industry.

Guiding Principles

Milton C. Mumford, the first chairman of EFL's Board of Directors, recalled that there were two guiding principles in the beginning: "to concentrate on things we

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could do something about, and to strike a balance between what the educational establishment wanted and what it didn't know it wanted but needed" (Armsey 1976:7).

Although EFL was to concern itself with the structures of education and the tools of the trade, those who created EFL had strong beliefs about what was right and wrong with education and of what ought to be. Form was to follow not only function but philosophy as well. "Our job," recounts Ruth Weinstock, "didn't just deal with the *things* of education, but with the feeling of the schoolhouse as a whole, as a total environment that could deeply affect learning and growth" (Weinstock 1999)

According to Ben E. Graves, EFL based its program on the principles that "facilities should be more sensitively designed to the new needs of education in a period of rapid, revolutionary change in instruction and social conditions" and "intelligent economy should be encouraged wherever, whenever, and however it could be" (Graves 1993: viii).

Leadership

From its start and throughout its duration, EFL was fortunate in its leadership. "It was controlled by people possessed not only of ideas but also of the energy to move, the knowledge to know where to move, and the wisdom to know how to move" (Armsey 1976:13).

Harold B. Gores, distinguished educator and a former superintendent of the Newton, Massachusetts school system, served as EFL president for 18 years and is given greatest credit for its success. This "facilities gadfly of American education" was a remarkably articulate, hard driving, deeply committed font of ideas and vigor. Jonathan King, treasurer and vice president of EFL from 1958 to 1970 and self-described "philanthropoid," was best known for his work in promoting industrialized building systems for school construction. He also directed EFL's publication program as an editor and writer. Weinstock, as research associate and writer and later as vice president, was a major force in the publication program from 1958 through 1982.

In its formative and major years of accomplishment, Chairman Mumford (at the time president of Lever Brothers) exerted a profound influence. Eurich, a former president of Stanford University, helped establish EFL, served on its board, and in 1979, as director of the Academy for Educational Development, arranged for it to become a division of the academy. Alan C. Green, architectural educator who took over as president in 1976, led EFL as it expanded its scope and merged with the academy. Graves, a member of the EFL staff beginning in the 1960s, headed the organization in its final years, while Paul Abramson directed the New York City office.

Operations

EFL headquarters were located in New York City but to widen its contact with educators and designers, EFL branched out in 1962 and began operating two regional centers— one at the School Planning Laboratory of Stanford University's School of Education and the other at the School Planning Laboratory of the University of Tennessee. In the 1970s, EFL opened an office in Austin, Texas, and supported three project centers—the Building Systems Information Clearinghouse at Stanford University, the New Life for Old Schools program in Chicago, and the American Association of Junior Colleges in Washington, D.C. EFL also operated several building systems programs across the country, including the School Construction Systems Development Program and the University Residential Building Systems in California; the Schoolhouse Systems Program in Florida; the Study of Educational Facilities Program in Toronto; and the Recherches en Amenagements Scolaires Program in Montreal.

Aggressive Philanthropy

EFL, as explained by King, "did not just sit around and wait for people to come in and ask for something. It figured out what ought to be done and got on with it." King termed the EFL approach "aggressive philanthropy" (Armsey 1976: 9). Graves believed that EFL was successful because it was independent and not tied to any interest group:

> We had only to answer to our board, who made certain we made grants that produced results that were truly experimental, would advance the knowledge of facilities planning and building, would be applicable to other institutions facing the same perplexing conditions, and would have sufficient leverage to bring brains and money to work, solving the facilities questions besetting schools and colleges (Graves 1993: viii).

By the mid-1960s, EFL had become *the* place to plant an idea and *the* place to call or write or visit if one had a problem or needed a little money to legitimize an idea. According to architect Richard J. Passantino, who wrote several publications for the EFL in the late 1960s and early 1970s, EFL was always good about investing $5,000 in hopes of hitting paydirt. "If you had an innovative idea, Gores was glad to talk with you. 'If I can kick it, I can fund it ,' Gores would often say." However, Passantino also recalled Green's often-repeated admonition to EFL grant recipients on their spending behavior: "We must be like Ceasar's wife: beyond approach." (Passantino 1999).

EFL was able to get tremendous mileage out of relatively small amounts of money. As one client put it, "they did for 5,000 to 10,000 dollars what cost others 50,000 to 100,000; they really knew how to . squeeze every dime out of every buck" (Armsey 1976:9). A school administrator described how EFL worked:

> Gores gathered the "top people", hired them for a day, put them in a room at 9 a.m., kept them there until 5 or 6 p.m. Had lunch brought in, picked their brains about a draft manuscript sent to them in advance, made them produce a second draft before he released them. He paid them $150 for the day as contrasted with the $500 to $600 most of them would have received from anyone else for the same work (Armsey 1976:15).

Innovations

EFL stimulated or accelerated innovations by investing the risk capital required in the development of new and promising solutions. Using small grants, EFL sent school administrators and architects around the country and abroad to see what others were doing, sponsored conferences, set up forums, provided consultants to school districts, conducted specific studies, prepared papers, produced films, and brought professional services to workshops. Grants were made available for study and research. As often as possible, the results of these efforts were published and widely disseminated.

Funding in EFL's early years tended to support elementary and secondary school projects, shifting later to projects that helped meet some of the problems posed by the enrollment boom in the colleges and universities. By the late 1970s, EFL contracts focused on projects concerning enrollment decline and surplus school spaces. Architect William Brubaker highlights the following research activities:

> EFL, working with educators, architects, and suppliers, (1) studied and promoted the use of folding and movable walls to gain the advantages of flexible space, (2) investigated and funded examples of "system" building components to build schools faster, cheaper, and better, (3) explored the use of new media, especially television, and studied how they might influence school design, and (4) encouraged school systems to try new organizational methods such as team teaching, new curricula, and new relationships within their communities (Brubaker 1998:20).

EFL also directed its grants to support new kinds of schools for the inner city and the introduction of middle schools, joint use and mixed occupancy of buildings, convertible dormitories, quieting the schoolhouse through carpeting and cooling it through air conditioning, improving school furniture design, and developing new products such as artificial turf and soundproof movable partitions.

The focus of EFL's last 10 years shifted to the changing enrollment patterns and facility needs, including the shifts in demography and social trends that would bring more mature students and even the elderly into higher education. Other issues included recycling and converting school buildings, developing community school centers, increasing citizen participation in planning processes, preparing for technological advances in communications and education, and conserving energy through more efficient building design and management.

Open Plan Schools and the Open Classroom Approach

One of EFL's most important innovations was the development of the "open plan," a concept that influenced the basic design of thousands of schools from the late 1950s through the early 1970s. Instead of schools with dozens of identical, boxy, and rigid classrooms (which Gores referred to as the "egg-crate plan" serving a program based on "cells and bells"), schools were planned with large, open, flexible spaces that could adapt to changing educational needs. Walls were eliminated to accommodate a new approach to education referred to as "open education" or "open classroom", a system developed in the British primary schools and brought to the United States in the 1960s.

Probably no educational philosophy has caused more controversy during the past 40 years than the open plan idea and its concept of flexibility. Over 650 published studies have examined this subject, many comparing open space schools with traditional schools, and to this day the open plan continues to elicit divided opinions and strong reactions. According to Abramson,

> [The open plan] was an attempt to get people to think more in terms of flexibility, in terms of facilities that would enhance the notion of team teaching, of non-grading, of differentiated staffing, of providing individual attention to each child, of using what were then known as "audio-visual" tools. In other words, it was a way to facilitate a change in the relationships among teachers, other staff and children. (Abramson 2000) .

Architecture professor Henry Sanoff, however, believes that the open space school concept was a disaster and points to noise and distraction as the most common complaints from both teachers and children (Sanoff, 1999). Joseph Nathan, currently director of the Center for School Change at the University of Minnesota's Humphrey Institute, would agree. He recalls working in an open school in the early 1970s: "We educators made it clear that we did not want an

entire open plan school. We combined some open spaces with many small and medium sized rooms—as teachers we knew that the open plan was distracting to kids, and very difficult for many kids to learn in" (Nathan 1999).

Another reason for the lack of success of the open classroom approach, according to Sanoff, was that it did not recognize that teachers would be required to make dramatic changes in their teaching style. "Unfortunately, an adequate training program did not accompany the new building concept"(Sanoff 1999). As Abramson describes it, teachers were dumped into open classrooms, willy-nilly. "If you still wanted a self-contained classroom, open space did not work. So the first need was to build a staff of teachers and administrators (and parents) that supported the notion that schools did not have to continue to be what they were in 1930. That was done in very few cases" (Abramson 2000).

Architect Ezra Ehrenkrantz, looking back at the open schools of the 1960s, explains how school boards across the country began to opt for the construction of schools that would support a team teaching program focused on small group or "individualized instruction." However, according to Ehrenkrantz, one of the things that school boards and architects did not recognize was that for teachers to work as a team, they needed time to plan together:

> The lack of proper support for the new modes of teaching resulted in failures throughout the country. These failures created a schism between educators and architects. Architects liked the big open spaces, and educators went along because the conventional wisdom of the time suggested that this was the appropriate strategy. But because they didn't understand the costs and that this mode of teaching required extra staff to provide the time for each of the teachers to plan, the programs really broke down. In the end, the open classroom was clearly an example where a design solution was being put into place without an agreed upon funding base (Ehrenkrantz 2000).

Even before hiring and training a staff, Abramson believes there should have been more planning that would have included making decisions about what should and should not be open (Abramson 2000). As Nathan remembers it, "We faculty had some big arguments with EFL architects who were stunned that as 'open school' teachers we did not embrace their 'open plan' architecture. Effective learning facilities need a combination of spaces, with considerable flexibility. The EFL folks who came to our school did not seem to understand this. They wanted lots of wide open spaces and no traditional classrooms" (Nathan 1999).

Steven Bingler, a national school designer, considers the open design so bad that it changed the course of school construction for decades across the country. "Because of the fiasco of the open plan school, [school systems] are even less open to the idea of doing anything different than what was done in the 1950's and '60s. I can't tell you how many people bring it up to me, 'I don't want to do anything different, because look at what happened with these open plan schools'" (Garber 1999:Sec B, p.1).

In Abramson's opinion, however, the open plan was not a major EFL mistake. The "mistake," if there was one, was in the timing and implementation, not the concept. As Abramson points out, when architects, planners, and faculty plan a new school today, one of the bywords is *flexibility*.

> The open classroom school was the ultimate in flexibility. It was not a bad idea, it was badly used and therefore it failed. But its failure should not be allowed to stand as an indictment of EFL; its failure was a failure of the education establishment to take what was good from the concept, to modify it to meet the realities of the educational process, and then to train teachers and others to use it properly (Abramson 2000).

School Construction Systems Development

With King as a primary mover, EFL awarded millions of dollars in grants for systems building programs for schools. The School Construction Systems Development (SCSD) project began in 1961 under the direction of Ehrenkrantz. Based on his experience with industrialized building in England, Ehrenkrantz developed a standardized method for the construction of school buildings and established a program specifically for component manufacturers.

Ehrenkrantz and King made presentations across the country, convincing school planners that by combining their purchasing power and agreeing to use standardized building component subsystems for several schools, they could get individually designed facilities of better quality at costs equal to or lower than schools built repetitively from stock plans.

In a 1969 interview, Ehrenkrantz (1969:55) described the SCSD program this way:

> Buildings that are erected as part of the SCSD program offer a tremendous variety in terms of expression, design, and design philosophy. We see SCSD as the beginning of an evolution within the building industry–where options are available to architects and educators and where different levels of performance have known cost levels. I see SCSD as an approach towards better precision in the design process—to determine what is wanted in a building and to develop the tools to utilize available resources in an optimal way.

SCSD led to the design and manufacture of a coordinated series of components for structural systems as well as for heating/ventilating/cooling, overhead lighting, interior partitions, doors and windows, and lockers. All components were designed to meet performance specifications that were developed after extensive study of the educational needs of typical school districts.

California's SCSD program was successfully completed in 1967. EFL continued to support grants that helped Toronto and Montreal develop their own school building systems. Other states and cities, including Florida, Boston, and Detroit, adapted the original systems to their own requirements. Industrialized building systems were also developed for college housing and academic buildings. According to writer George Rand and architect Chris Arnold, "The SCSD process was clearly the major experimental building program of the sixties. The methods, procedures and hardware systems developed as a result have had a profound influence on American design and construction" (Rand and Arnold 1979:52).

EFL Publications

From its inception, EFL carried on an active publishing program. It recognized that its efforts to produce superior facilities and equipment for education would have little impact if such developments were not brought to the attention of architects, educators, governing boards, and the public. The publications, mostly soft-covered pamphlets and books, were well-written and edited, and attractively designed to appeal to professionals and laymen alike. They included six series, four newsletters, and over 100 individual reports on major areas of concern in educational facilities planning and development.

In addition to EFL's own publishing efforts, other organizations published and distributed hundreds of reports on EFL-sponsored projects or research activities. EFL's assistance also helped bring into print a number of important works by individual authors in the field. Numerous books included articles by members of the EFL staff. Films resulting from EFL-funded efforts reached an audience numbering in the millions through television broadcasts and individual screenings.

EFL's Impact

Brubaker described school construction in the 1960s as dominated by the research and extension activities of the EFL. He attributed the exciting partnership between it and the schools as having an impact on school design nationwide and in Canada. "Thousands of educators, planners, engineers, and architects were influenced by EFL, and that influence continues today" (Brubaker 1998:20).

In the process of evaluating EFL for the Ford Foundation in 1976, James Armsey interviewed numerous architects, educators, and school administrators. Among their comments were (Armsey 1976:11–13):

Schools all around the country look different and are different from the way they would have looked without EFL.

EFL advanced the state of the art of school design and construction by a generation. It was not only what they did but what they stood for–objectivity.

Architects can't get very far ahead of their clients; but EFL was outside both the client and the architect, and that was of great value. It fronted for the client, and it promoted aggressively.

EFL's greatest single contribution was to institutionalize progressive thought in school construction and equipment. It forced educators to think about function and architects to think about how to build to carry out the function.

EFL had a greater impact on educational facilities than any other single force in the history of American education.

Finally, Armsey (1976:3) himself is unequivocal in his evaluation. Referring to EFL's years under Gores' leadership, he said:

EFL came along at the right time. It had a clearly stated, limited purpose; it was provided with adequate funds from a single source so that it didn't have to divert its energy, distort its program, or divide its time by scratching for funds elsewhere. It was headed by a single, highly competent leader over the entire period. It had a clarity and simplicity in purpose, consistency and competency in leadership, and adequacy and security in financial support. If that combination won't produce results, nothing will.

EFL Publications and Films

Selected Reports:

Educational Change and Architectural Consequences
The Cost of the Schoolhouse
High School: The Process and the Place
The Greening of the High School
Schoolhouse in the City
SCSD: The Project and the Schools
The School Library: Facilities for Independent Study in the Secondary School
Design for ETV: Planning for Schools with Television
Brick and Mortarboards: A Report on College Planning and Buildings
The Graying of the Campus

Series:

Profiles of Significant Schools—developments in the design of individual schools or school building types

Case Studies of Educational Facilities—specific solutions to problems in school planning and design

Technical Reports—topics of interest to specialists in architecture, engineering, and other technical areas

Systems Reports—reports from the Building Systems Information Clearinghouse

Community School Center—how to create and manage buildings for community and school use

Communications Technology—case studies and theme profiles on developments and trends in the field

Newsletters

BSIC/EFL Newsletter—developments in the systems approach to building educational facilities

College Newsletter—design questions for colleges and universities

New Life for Old Schools—case studies on renovating existing school facilities

Schoolhouse—financing, planning, designing, and renovating school facilities

Films

To Build a Schoolhouse—shows trends in school design through tours of significant schools; narrated by Chet Huntley

Room to Learn—describes the Early Learning Center in Stamford, Connecticut, an open-plan early childhood school

Exercise in Economy—shows the planning, construction, and operation of geodesic-domed field house

A Child Went Forth—focuses on inner-city schools and school building programs

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